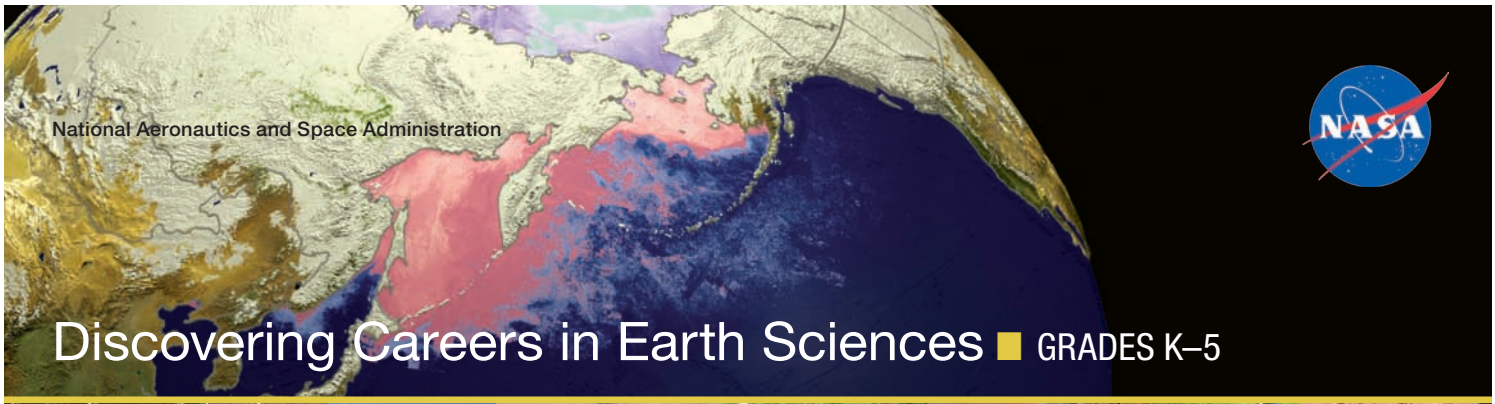
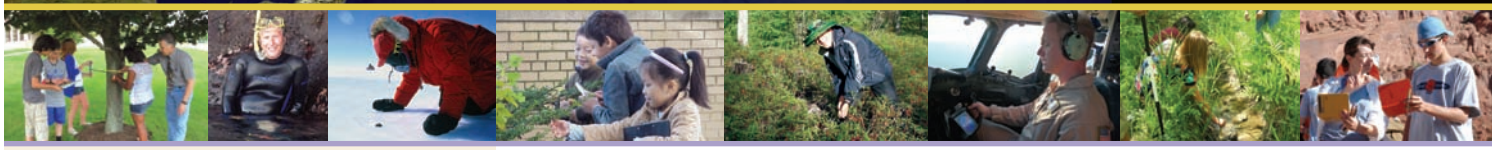


Discovering Careers in Earth Sciences ■ GRADES K–5



For more than 50 years, NASA has provided us with unique views and knowledge of Earth. This is made possible by the contributions of thousands of scientists across the nation who study the interactions among its air, land, water, ice and life, and whose work paints a comprehensive picture of this complex planet we call home.

Celebrate Earth Science Week 2012 with NASA!

To learn more about NASA resources and events planned for ESW and beyond:

http://climate.nasa.gov/esw2012

Earth Science Week 2012 celebrates the many exciting career paths in the geosciences field. With these resources in tow you and your students can discover firsthand accounts from many NASA Earth scientists as well as pick up classroom tools to bring real science into your classroom or science center.

Top banner image: *This image uses NASA MODIS data to show snow cover and sea ice surface temperature in the Northern Hemisphere on March 15, 2003. Source: NASA/ Goddard Space Flight Center*

A DAY IN THE LIFE

Climate Kids: Green Careers • http://bit.ly/ESW12_green • This multimedia-rich site uses age-appropriate language, games, and humorous illustrations and animations to help explain the important issue of climate change. The *Green Careers* section features interviews with folks involved in a variety of green careers, such as Michelle Pekko-Seymoure, a landscaper • http://1.usa.gov/ESW12_landscape; Mauricio Mejia, a home energy auditor • http://1.usa.gov/ESW12_auditor; and Jaret Foster, a farmer's market manager • http://1.usa.gov/ESW12_farmer.

GLOBE Contrail Site: Careers • http://bit.ly/ESW12_contrailcareer • This website describes a variety of career options for students interested in clouds and contrails, including working in education or government, meteorology, aeronautics, and more!

Space Place • http://1.usa.gov/ESW12_spaceplace • This website provides a range of interactive games, hands-on projects and fun facts about space and Earth science. Check out *Space Place Live* where the Space Place (cartoon) kids host their own talk show from the Space Place Clubhouse. The show introduces kids to the life of real scientists and engineers working in the space program. In the episode with Andre Dress of the GOES project • http://1.usa.gov/ESW12_dress • the kids interview a cartoon version of the GOES satellite deputy project scientist. During the episode, Dress talks about the GOES-O (Geostationary Operational Environmental Satellites) weather satellite as it was being prepared for its June 2009 launch.

EARTH GAMES & APPS

Mission to Planet Earth • http://1.usa.gov/ESW12_mission • Help prepare five NASA Earth missions, including Aqua, Terra and Aura, with this online card game.

Satellite Insight: A GOES-R Game • http://1.usa.gov/ESW12_insight • Play to help the GOES-R satellite manage massive inflows of data.

Unscramble the Clouds • http://1.usa.gov/ESW12_unscramble • Put together images of clouds while you learn more about what they are and why they are important.

FOR THE ELEMENTARY CLASSROOM

MATHEMATICS

NASA E-Clips • http://1.usa.gov/ESW12_eclips • These short, relevant educational video segments inspire and engage students, helping them see real-world connections to NASA science.

Segments in the *Our World* series introduce key concepts to students in grades K–5 such as:

Snowpits—Learn about adaptations that help animals survive in winter biomes. See how scientists build snowpits to investigate these unique environments. Find out why NASA is interested in snow and ice.

What Is a Cloud?—Learn about the different types of clouds and cloud formation, as well as the relationship between clouds and weather on Earth.

What Is Weather?—Explore the relationship between weather and climate. Learn how heat, air pressure, winds and moisture work together to produce local weather.

Why Are Oceans Salty?—Learn about how oceans were formed, what makes them salty, and how they are different from fresh water rivers.

NASA PUMAS • http://1.usa.gov/ESW12_pumas • The *Practical Uses of Math And Science* online journal is a collection of examples written by scientists, engineers and other experts that show how math and science topics taught in K–12 classes are used in everyday life. Examples for elementary teaching include: *Why Don't Clouds Fall from the Sky?, The Shadow of the Dog, The Cause of the Earth's Seasons, Modeling the Motions of the Earth, Moon and Sun,* and *Metric Wins!*

S'COOL—Students' Cloud Observations On-Line • http://bit.ly/ESW12_scool • S'COOL observations provide one more piece of the puzzle in the study of clouds and their role in our weather and climate. The S'COOL Project involves students (ages 5–20+) in real science, making and reporting ground truth observations of clouds to assist in the validation of NASA's CERES satellite instruments. The website includes cloud ID charts, tutorials and classroom activities.

SCIENCE

Aquarius Hands-On Lab Activities • http://bit.ly/ESW12_aquarius • These hands-on laboratory activities and demos are from NASA's Aquarius mission, which is improving understanding of salinity-driven ocean circulation and its influence on climate and the water cycle. Elementary resources include: *Liquid Rainbow* • http://bit.ly/ESW12_rainbow • through which students investigate the properties of water by devising schemes to stack solutions of different densities; and *Evaporation Investigation* • http://bit.ly/ESW12_evaporation • which allows students to observe and understand the process of evaporation.

GLOBE Contrail Site • http://bit.ly/ESW12_contrail • This website contains the latest information pertaining to contrails, including their history and science, and their importance to climate research. It includes a contrail gallery with imagery from satellites, a crossword puzzle, a glossary, and a contrail ID chart. It also contains a frequently asked questions (FAQ) site, which can be used to ask questions to the experts at NASA.

MY NASA DATA • http://bit.ly/ESW12_mnd • This portal allows students to investigate microsets of NASA Earth science satellite data, including atmosphere, biosphere, ice, ocean, and land surface data.

Lesson plans for grades K–2 include:

Basic Line Plots • http://bit.ly/ESW12_mnd_plots • which engages students in basic line plot analysis using data for ocean wind speed.

The Sun's Energy • http://bit.ly/ESW12_mnd_sun • which allows students to evaluate changes in the amount of solar energy that reaches the Earth.

Lesson plans for grades 3–5 include:

Rock Star Precipitation • http://bit.ly/ESW12_mnd_rockstar • in which students draw conclusions from precipitation data to determine the dates of outdoor concerts.

Seasons • http://bit.ly/ESW12_mnd_seasons • which allows students to connect the idea of the tilt and orbit of the Earth with monthly snow/ice data.

READING

The Adventures of Amelia the Pigeon • http://1.usa.gov/ESW12_amelia • This interactive adventure engages children in a story-based scenario that emphasizes concepts of remote sensing and how NASA scientists use satellite imagery to better understand the Earth's environmental changes. It introduces students to Earth science concepts, beginning with classifying objects in satellite images by shape, color and texture, building a foundation for interpreting and understanding remote sensing.

Elementary GLOBE • http://bit.ly/ESW12_elemglobe • This instructional unit is composed of five modules designed to introduce students to the study of Earth system science (ESS). Through science-based storybooks and classroom activities, the modules address ESS and interrelated subjects such as weather, hydrology, phenology and soils.

Find these activities, lesson plans and books— and hundreds more!
www.smdeponews.org

TEACHER'S CORNER

Keep up with these extreme Earth scientists with articles on their latest research, interviews and blogs.

GLOBE Scientist's Blog • http://bit.ly/ESW12_sciblog • In this online journal, scientists from the GLOBE educational program post their thoughts, comments and philosophies about a variety of science topics, such as climate and climate change. Students have the opportunity to share comments and discuss the topics with each other.

NASA EDGE • http://1.usa.gov/ESW12_edge • These videos and profiles offer a unique look at NASA through the eyes of its thousands of scientists. Check out: *Hurricane GRIP* • http://1.usa.gov/ESW12_grip • to learn about the NASA GRIP experiment team and how NASA is studying the development of tropical storms into hurricanes; *A-Train* • http://1.usa.gov/ESW12_train • to hear about NASA's Earth observations satellite constellation and how it gives us an unprecedented look at our planet's climate; and *Discover-AQ* • http://1.usa.gov/ESW12_discover • to learn about monitoring air quality near the Earth's surface.

Operation IceBridge (OIB) • http://bit.ly/ESW12_oib • NASA's IceBridge mission, the largest airborne survey of Earth's polar ice, aims to study the rapidly changing features of the Greenland and Antarctic ice. Check out the OIB blog to learn more about a day in the life of these extreme scientists.

Other Blogs

My Big Fat Planet • http://1.usa.gov/ESW12_planet

Notes from the Field • http://1.usa.gov/ESW12_field

What on Earth • http://bit.ly/ESW12_earth